ABSTRACTS

Gregory L. Moneta, MD, Abstracts Section Editor

Paint-Only is Equivalent to Scrub-and-Paint in Preoperative Preparation of Abdominal Surgery Site

Ellenhorn JDI, Smith DD, Schwarz RE, et al. J Am Coll Surg 2005; 201:737-41.

Conclusion: A paint with povidone-iodine by itself provides equal preoperative preparation of the abdominal wall as a scrub with povidone-iodine soap, followed by paint with povidone-iodine.

Summary: The authors conducted a prospective randomized trial comparing scrub-and-paint with povidone-iodine soap followed by absorption with a sterile towel and subsequent paint with povidone-iodine versus surgical site preparation with paint only of povidone-iodine. The primary end point was wound infection at 30 days with wound infection defined as clinical signs of infection requiring therapeutic intervention. Excluded patients included those with active infection at the time of operation, known sensitivity to iodine, neutropenia, or insertion of prosthetic material during operation. Patients were randomized to a scrub-and-paint group or a paint only group with povidone-iodine.

There were 115 patients randomized to the scrub-and-paint arm and 119 to the paint only arm of the trial. Patients were well matched with respect to surgical co-morbidities, age, operative time, drains, surgical procedure, and prophylactic antibiotic use. There were 12 wound infections in the scrub-and-paint patients (10%) and 12 wound infections in the paint only patients (10%).

Comment: These data apply only to clean and clean-contaminated cases that do not involve placement of a prosthetic device. While the data are interesting, they do not provide guidance as to the proper surgical prep site technique for patients undergoing insertion of prosthetic grafts. The optimal surgical prep site technique with respect to insertion of prosthetic vascular grafts remains to be determined.

Autologous Transplantation of Granulocyte Colony–Stimulating Factor–Mobilized Peripheral Blood Mononuclear Cells Improves Critical Limb Ischemia in Diabetes

Huang P, Li S, Han M, et al. Diabetes Care 2005;28:2155-60.

Conclusion: Autologous transplantation of granulocyte colony stimulating factor mobilized peripheral blood mononuclear cells and improves critical limb ischemia in patients with diabetes.

Summary: Granulocyte colony-stimulating factor when injected can result in mobilization of stem-progenitor cells and their peripheral blood mononuclear cells (PBMNC) these cells can then be collected and transplanted through the use of multiple intramuscular injections into ischemic limbs. In this study 28 patients with diabetes and critical limb ischemia were enrolled in a randomized study to evaluate the effect of G-CSF mobilized peripheral blood mononuclear cells for treatment of critical limb ischemia. Patients were randomized to either a transplant or control group. The transplant group received subcutaneous injections of recombinant human G-CSF for 5 days. Stem-progenitor cells and their PBMNCs were collected and then transplanted into ischemic limbs through the use of multiple intramuscular injections. Follow up extended for at least 3 months.

At the end of 3 months of follow up laser Doppler blood perfusion of lower limbs increased from 0.44 ± 0.11 to 0.57 ± 0.14 perfusion units in the patients with the transplanted stem-progenitor cells versus controls ($P < 0.001$). In the patients with the transplanted cells the mean ankle brachial index also increased from 0.50 ± 0.21 to 0.63 ± 0.25 ($P < 0.001$). In the transplanted patients, 14 of 18 limb ulcers (77.8%) completely healed. Limb ulcers healed in 7 of 18 limbs in the control group (38.9%), $p = 0.016$. There were no lower limb amputations in the transplanted patients and 5 amputations in the control group ($P = 0.007$). There were also significant improvements in the angiographic scores of the transplant group compared to the control group ($P = 0.003$).

Comment: This is a new approach to therapeutic angiogenesis using transplanted stem cells to induce lower extremity angiogenesis. The results of this study are encouraging and should foster design of larger studies to more fully assess the therapeutic potential of using stem cells as angiogenic mediators.

Is Duplex Surveillance of Value After Leg Vein Bypass Grafting? The Principle Results of the Vein Graft Surveillance Randomized Trial (VGST)

Davies AH, Howdon AG, Thompson SG, and the VGST Participants. Circulation 2005;112:1985-91.

Conclusion: Intensive postoperative graft surveillance with duplex scanning following lower extremity vein bypass graft operations does not result in lower amputation rates than a simple program of clinical surveillance.

Summary: This was a multicenter, randomized, prospective, controlled clinical trial. There were 594 patients with a patent vein graft 30 days following surgery. These patients were randomized to either clinical follow up alone or a duplex follow up program with studies at 6 weeks and then 3, 6, 9, 12, and 18 months postoperatively. Approximately 2/3 of the grafts were placed for critical ischemia with 2/3 of the distal anastomoses to the popliteal artery either above or below the knee. Approximately 1/3 of the patients in each group had diabetes and the median age was 70 years in each group. Ipsilateral greater saphenous vein was used in 92% of the clinical follow up group and 94% of the duplex follow up group.

There are no differences in the clinical and duplex surveillance groups with respect to amputation rates (7% for each group) in vascular mortality (3% v 4%) at 18 months. There were more stenoses at 18 months in the clinical group (19% v 12%, $P = 0.04$). Primary patency, primary assisted patency, and secondary patency were similar in the clinical group (69%, 75%, and 80% and the duplex group 67%, 76%, and 79%). There were no apparent differences in health related quality of life but the duplex surveillance program was more costly by an average of 495 pounds more per patient.

Comment: Vein graft stenoses develop more frequently in longer grafts (ie tibial distal targets), grafts placed for limb salvage, disadvantaged grafts (composite grafts, arm vein grafts) and perhaps in patients undergoing repeat procedures. In this paper most of the patients probably had primary operations as evidenced by the high level of use of ipsilateral greater saphenous vein, 2/3 of the anastomoses were to the popliteal artery, and amputation rates appeared to have been analyzed using both claudicants and limb salvage patients for the life table, a bit of a no-no. In short, if ever there were a group of patients who are unlikely to benefit from duplex surveillance, this is the group. This paper should not lead one to abandon vascular laboratory duplex surveillance for vein grafts potentially at increased risk for stenosis as noted above. However, the data does suggest that when a vein graft is placed to a popliteal artery using ipsilateral saphenous vein, duplex surveillance may not be of much benefit in reducing amputations over the short run.

Percutaneous Management of Chronic Mesenteric Ischemia: Outcomes After Intervention

Landis MS, Rajan DK, Simons ME, et al. J Vasc Intervention Radiol 2005;16:1319-25.

Conclusion: Percutaneous transluminal angioplasty of the celiac and superior mesenteric arteries is technically feasible, provides good initial results, but often requires subsequent interventions to maintain patency.

Summary: This was a retrospective review of patients treated with percutaneous angioplasty for chronic mesenteric ischemia from the period of January 1986 to August 2003. There were 29 patients treated with a mean age of 62 years. Symptoms were felt to be consistent with chronic mesenteric ischemia. All patients underwent angiography and angioplasty with or without stent placement based on angiographic and/or pressure gradient findings. Kaplan-Meier life table methods were used to determine primary and assisted primary patency rates.

There were a total of 63 interventions performed in the 29 patients. Forty-six interventions were percutaneous angioplasty alone and 17 involved placement of stents. There were 34 interventions for SMA stenosis or occlusion and 17 interventions for celiac artery stenosis or occlusion with 4 interventions performed on aortomesenteric graft stenoses.

Technical success was 97%. Defining clinical success as resolution of symptoms, clinical success was 90%. Mean follow up was 28.3 months. Primary patency for all interventions at 3, 6, and 12 months was 82.7% (95% CI: 68.7-96.7), 78.9% (66.7-91.1) and 70.1% (55.1-85.6) respectively. At 3, 6, and 12 months primary assisted patency for all interventions was 87.9% (79.0-5.3), 87.9% (79.2-95.1) and 87.9% (77.3-98.3), respectively. There were an average of 1.9 interventions performed per patient. There was one major complication (3.4%) and 3 minor complications (10.3).

Comment: There is accumulating data regarding the expected results of percutaneous interventions for mesenteric artery stenosis. Excellent technical success can be anticipated but the need for repeat intervention to maintain long term patency should be expected.